

WHAT IS CLAIMED IS:

1. An isolated nucleic acid molecule having the nucleotide sequence of SEQ ID NO:1.
2. An isolated nucleic acid molecule having the nucleotide sequence of SEQ ID NO:4.
3. The isolated nucleic acid molecule of claim 1, wherein said nucleic acid molecule is operably linked to at least one expression control sequence.
4. A host cell transformed or transfected with the nucleic acid molecule of claim 3.
5. The isolated nucleic acid molecule of claim 2, wherein said nucleic acid molecule is operably linked to at least one expression control sequence.
6. A host cell transformed or transfected with the nucleic acid molecule of claim 5.
7. An isolated nucleic acid molecule that specifically hybridizes under highly stringent conditions to the sequence set forth in SEQ ID NO:1, or to the complement of the sequence set forth in SEQ ID NO:1.
8. An isolated nucleic acid molecule that specifically hybridizes under highly stringent conditions to the sequence set forth in SEQ ID NO:4, or to the complement of the sequence set forth in SEQ ID NO:4.

9. An isolated nucleic acid molecule that encodes a protein having the amino acid sequence of SEQ ID NO:2.
10. An isolated nucleic acid molecule that encodes a protein having the amino acid sequence of SEQ ID NO:5.
11. An antisense oligonucleotide complementary to a mRNA corresponding to a nucleic acid molecule having the nucleotide sequence of SEQ ID NO:1, wherein said oligonucleotide inhibits production of HIPK4.
12. An antisense oligonucleotide complementary to a mRNA corresponding to a nucleic acid molecule having the nucleotide sequence of SEQ ID NO:4, wherein said oligonucleotide inhibits production of HIPK4.
13. An isolated gene comprising a nucleic acid molecule having the nucleotide sequence of SEQ ID NO:3.
14. An isolated gene comprising a nucleic acid molecule having the nucleotide sequence of SEQ ID NO:6.
15. An isolated allele of a nucleic acid molecule having the nucleotide sequence of SEQ ID NO:1.
16. An isolated allele of a nucleic acid molecule having the nucleotide sequence of SEQ ID NO:3.
17. An isolated allele of a nucleic acid molecule having the nucleotide sequence of SEQ ID NO:4.

18. An isolated allele of a nucleic acid molecule having the nucleotide sequence of SEQ ID NO:6.
19. An isolated protein having the amino acid sequence of SEQ ID NO:2, or an active fragment thereof.
20. An isolated protein having the amino acid sequence of SEQ ID NO:5, or an active fragment thereof.
21. An isolated antibody capable of binding to the protein of claim 19.
22. An isolated antibody capable of binding to the protein of claim 20.
23. A nonhuman transgenic animal in which all of the somatic and germ cells contain DNA comprising a nucleic acid molecule having the nucleotide sequence of SEQ ID NO:1.
24. A nonhuman transgenic animal in which all of the somatic and germ cells contain DNA comprising a nucleic acid molecule having the nucleotide sequence of SEQ ID NO:3.
25. A method of inhibiting apoptosis in a cell population comprising transforming or transfecting said cell population with the nucleic acid molecule of claim 3.
26. A method of inhibiting apoptosis in a cell population comprising transforming or transfecting said cell population with the nucleic acid molecule of claim 5.

27. The method of claim 25, wherein the cell population is a population of neurons.

28. The method of claim 26, wherein the cell population is a population of neurons.

29. A method of identifying a compound capable of inhibiting the activity of a HIPK4 protein comprising the steps of:

(a) contacting a first sample containing the HIPK4 protein with one of a plurality of test compounds; and

(b) comparing the activity of the HIPK4 protein in the first contacted sample with that of the HIPK4 protein in a second sample not contacted with the test compound,

wherein a decrease in the activity of the HIPK4 protein in the first sample, as compared with that in the second sample, identifies the compound as an inhibitor of HIPK4 protein activity.

30. The method of claim 29, wherein the HIPK4 protein is the protein of claim 19.

31. The method of claim 29, wherein the HIPK4 protein is the protein of claim 20.

32. A method of identifying a compound capable of increasing the activity of a HIPK4 protein comprising the steps of:

(a) contacting a first sample containing the HIPK4 protein with one of a plurality of test compounds; and

(b) comparing the activity of the HIPK4 protein in the first contacted sample with that of the HIPK4 protein in a second sample not contacted with the test compound,

wherein an increase in the activity of the HIPK4 protein in the first sample, as compared with that in the second sample, identifies the compound as an activator of HIPK4 protein activity.

33. The method of claim 32, wherein the HIPK4 protein is the protein of claim 19.

34. The method of claim 32, wherein the HIPK4 protein is the protein of claim 20.

35. A method of treating an individual with a neurological disorder comprising administering an effective amount of a compound identified by the method of claim 29 to said individual.

36. A method of treating an individual with a neurological disorder comprising administering an effective amount of a compound identified by the method of claim 32 to said individual.

37. A method of enhancing HIPK4 activity in a human host comprising administering a compound that enhances the activity of the HIPK4 gene product to a human host in need of such treatment.

38. A method of decreasing HIPK4 activity in a human host comprising administering a compound that decreases the activity of the HIPK4 gene product to a human host in need of such treatment.

39. A method of inhibiting expression of HIPK4 in a cell population comprising treating said cell population with the antisense oligonucleotide of claim 11.
40. A method of inhibiting expression of HIPK4 in a cell population comprising treating said cell population with the antisense oligonucleotide of claim 12.
41. A method of inhibiting expression of HIPK4 in a cell population comprising treating said cell population with a siRNA molecule targeted to a mRNA corresponding to the isolated nucleic acid molecule of claim 1.
42. The method of claim 41, wherein the siRNA molecule is selected from the group consisting of siRNA molecules shown in Figure 1.
43. A method of inhibiting expression of HIPK4 in a cell population comprising treating said cell population with a siRNA molecule targeted to a mRNA corresponding to the isolated nucleic acid molecule of claim 2.
44. A siRNA molecule that inhibits the expression of HIPK4.
45. A siRNA molecule of claim 44, wherein the siRNA molecule is selected from the group consisting of siRNA molecules shown in Figure 1.
46. An isolated nucleic acid molecule comprising a sequence at least 96.3% identical to SEQ ID NO:1.
47. A purified polypeptide, the amino acid sequence of which comprises a sequence at least 97.2% identical to SEQ ID NO:2.